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The effect of admitted patients in the emergency department on rates of hospital admissions

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Accepted 1 September 2012
Published Online First
16 October 2012

ABSTRACT

Emergency Department overcrowding with admitted inpatients is a common international occurrence. We undertook a retrospective review to compare patient admission rates from patients presenting to our Emergency Department with the level of overcrowding with admitted inpatients on that particular day in the Emergency Department. Over the 2-year study period there was no change in the rate or absolute number of admissions per day compared with the level of inpatient overcrowding.

INTRODUCTION

Emergency Department overcrowding is a common international concern.^{1 2} Nationally there is a mixed opinion on whether this has a positive or negative effect on the rates of admission. One opinion is that if the Emergency Department is overcrowded then disproportionately more referrals are made in order to divert some of the workload to in-hospital specialties and thus possibly cause more admissions. The other opinion is that a greater attempt is being made at admission avoidance measures by the Emergency Medicine staff in order to alleviate the problem of overcrowding.

The objective of this retrospective review of patient data was to assess if there was any alteration in the rates of admission based on the levels of overcrowding in the Emergency Department.

METHOD

A retrospective review was performed of all attendances in this Emergency Department from January 2010 to December 2011.

This hospital sees approximately 60 000 emergency medicine patients per annum and has a total of 512 inpatient beds across all specialties. There is a total of four Consultants, one Staff Grade, six Registrars, nine Senior House Officers and one Intern whole time equivalent posts working as Emergency Physicians for this patient load.

All patient attendances to our Emergency Department are tracked by an Electronic Patient Information system—Irish Medical Systems (IMS) Maxims. This allows the percentage and absolute number of patients who were admitted on each particular day to be ascertained. A logbook is kept in the Emergency Department and updated every day at 08:00 documenting the number of extra admitted inpatients in the Emergency Department. The authors' opinion is that this figure would be representative of the degree of overcrowding on that particular day. The authors compared these two variables between January 2010 and December 2011 to

demonstrate their relationship. Complete data were available from 1 January 2010 to 23 December 2010 and 2 January 2011 to 22 December 2011. The results are illustrated graphically on a scatter gram and include a linear trend line inserted with standard Microsoft Excel software (figures 1 and 2).

RESULTS

There were a total of 114 836 attendances during the study period of 712 days. There was no significant change in the rate of admission in our Emergency Department based on the level of overcrowding during this period. The slope of the graph in figure 1 representing this was 0.0006 and had an r^2 value of 0.88%. Similarly, the actual number of admissions did not change significantly based on the level of overcrowding in the Emergency Department. This is represented by the graph in figure 2 which has a slope of 0.159 and an r^2 value of 1.7%.

LIMITATIONS

No other variable such as the actual number of presentations per day or their severity of illness on these particular days was considered in these data. The data are also dependent on the reliability of the staff in updating the electronic patient information system. It would be difficult to assess the effect of these variables based on our available data. An assumption that the number of inpatients at 08:00 is representative of the level of overcrowding is made which may not be representative of overcrowding for that entire day. This was done as the most data were available for this particular time.

DISCUSSION

In this Emergency Department, admitted patients fall outside the governance and clinical care of Emergency Medicine even if the patient is boarded in the Emergency Department. This ensures that emergency medical staff resources are optimised only for the care of Emergency Medicine patients. The data show that Emergency Department overcrowding does not have any significant effect on the rates of admission from this Emergency Department. This helps in dismissing the belief that by overcrowding an Emergency Department less admissions are made to the hospital, which can have financial implications to the hospital. In Ireland, patients admitted via the Emergency Department tend not to generate the same amount of financial revenue for the hospital as it impacts on elective private cases being performed.



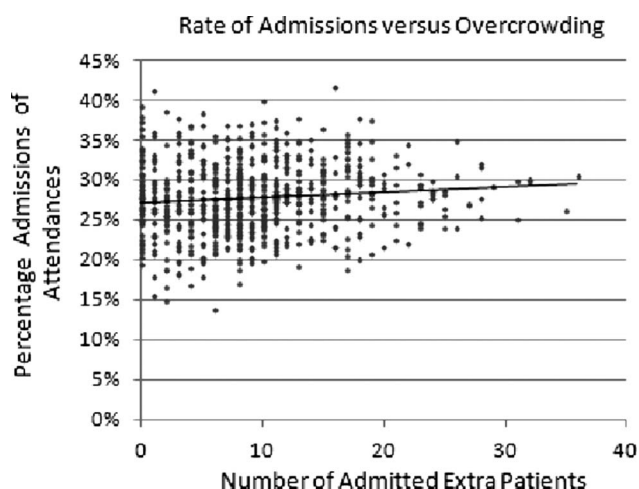


Figure 1 Rates of admissions versus overcrowding.

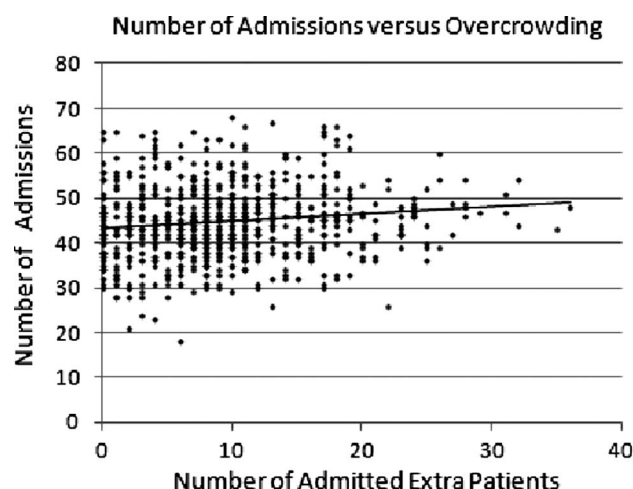


Figure 2 Number of admissions versus overcrowding.

CONCLUSIONS

Emergency Department overcrowding does not significantly affect the absolute rate or number of admissions through this Emergency Department.

Contributors EF and FC were responsible for the original concept for the study. EF compiled the data. Assistance was given by Dr Jean Saunders from University of Limerick in analysing the data. The write up of the article was done by EF and FC. All work was done in the Emergency Department, University of Limerick Hospital.

Competing interests None.

Ethics approval Ethics approval was obtained from the Ethics Board, University of Limerick Hospital, Limerick, Ireland.

Provenance and peer review Not commissioned; externally peer reviewed.

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